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EVALUATION OF NUMERICAL WEATHER PREDICTION IN MODELING CLOUD-RADIATION INTERACTIONS OVER THE SOUTHERN GREAT PLAINS

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ABSTRACT

Numerical weather prediction (NWP) is the basis for present-day weather forecasts, and NWP representation of cloud-related fast physics shares similarities with climate models. Here, we use ground- and satellite- based observations over the Southern Great Plains to evaluate how well cloud-radiation interactions are simulated in current operational NWPs. The evaluation focus is on the simulations of cloud properties (e.g., cloud fraction, cloud liquid/ice water path, cloud optical depth) and their interactions with surface solar and infrared radiation fluxes. The three operational NWPs used are the European Centre for Medium-Range Weather Forecasts, the US North American Model, and the US Global Forecast System. Attempts will be made to assess the NWP performances in the context of climate models.

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